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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,379	10/18/2005	Gerhard Eser	78857.105313	3677

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EXAMINER	
COLEMAN, KEITH A	

ART UNIT	PAPER NUMBER
3747	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,379	ESER ET AL.	
	Examiner	Art Unit	
	KEITH COLEMAN	3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10,12-17 and 19-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10,12-17 and 19-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14-17 and 20-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regards to claims 14-17 and 20-23, Applicant's specification clearly states in Paragraphs 26 and 29 that

"[0026]However, if the condition of step S4 is not satisfied, the actuating signal SG is determined as a function of the set point FUP_SP and the gradient FUP_DT_AV in a step S6, the **actuating signal preferably** being reduced in the event of a rise in the fuel pressure, indicated by a positive fuel pressure gradient FUP_DT_AV, **and increased in the event of a fall in the fuel pressure**, indicated by a negative fuel pressure gradient FUP_DT_AV, the actuating signal SG preferably being determinable as a function of the fuel pressure gradient FUP_DT_AV and fuel pressure set point FUP_SP by means of interpolation using an engine map."

"[0029] FIG. 3 shows on the one hand the characteristic of the actual fuel pressure value FUP_AV as **a function of the flow Q** through an electromagnetic regulator 56. The two hysteresis-shaped fuel pressure curves plotted as a function of

the flow Q are shown for two different values of the actuating signal. In the case of the value of the actuating signal SG set for point P1, the plotted time characteristic of the actual fuel pressure value FUP_AV over the time axis t relative to the points P1, P2' and P3 is obtained. However, the variation in fuel pressure of the actual fuel pressure value FUP_AV from point P1 to point P2 is greater than the value predetermined by the first threshold value THD1 in step S4 for the absolute value of the gradient FUP_DT_AV. This **means that the actuating signal is reduced** even before reaching point P2, as is likewise plotted in FIG. 2 on the basis of point P2 as a function of the time t and the actuating signal SG. This then produces the pressure characteristic of the actual value FUP_AV over time along points P1, P2 and P3. The pressure characteristic is therefore much more uniform than for points P1, P2' and P3."

As such, claims 15, 16, 21, and 22 are interpreted as if the **fuel pressure rate falls increasing** the energization of the electromagnetic regulator, and claims 14 and 20 are interpreted as if the **flow rate falls increasing** the energization of the electromagnetic regulator.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10, 12-17, and 19-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Amann et al. (US Patent No. 5,345,916).

With regards to claims 10 and 12, the patent to Amann et al. discloses a method for controlling a fuel pressure in a fuel supply device of an internal combustion engine having a regulator valve, the method comprising the steps of: determining a desired fuel pressure value (i.e. predetermined classic injection profiles, See Col. 4, Lines 45-55); determining an actual fuel pressure value (i.e. the fuel pressure pulses, See Figure 6); **determining an actual gradient** selected from the group consisting of: **an actual** fuel flow rate **gradient** and **an actual** (Figure 6 shows pumping rate measured in mm3/degree and fuel pressure pulses) fuel pressure **gradient; comparing the calculated actual gradient to s specified threshold gradient value (See Figure 5A and 5B);** and if the **calculated actual gradient** is above **the** specified threshold **gradient** value then determining an actuating signal as a function of the desired fuel pressure value and the **calculated actual gradient** controlling said regulator valve with said actuating signal (See Col. 4, Lines 30-45) Note: Applicant has defined "gradient" as a change in pressure values as discussed in Paragraph 24. As such, Amann et al. clearly monitors the flow rates as shown in Figures 5 and 6 and discussed on Col. 5, Lines 15-30.

With regards to claims 13 and 19, the patent to Amann et al. discloses wherein the regulator valve is an electromagnetic regulator and an energization of the electromagnetic regulator is influenced by the actuating signal (See Col. 4, Lines 30-40).

With regards to claims 14-17 and 20-23, the patent to Amann et al. discloses if the flow rate increases decreasing an energization of the electromagnetic regulator and if the flow rate falls **increasing** the energization of the electromagnetic regulator (See Col. 4, Lines 30-55).

Response to Arguments

1. Applicant's arguments filed 4/22/2009 have been fully considered but they are not persuasive.

Applicant's Argument

Rejections under 35 U.S.C. § 112

Claims 14-18 and 20-23 were rejected by the Examiner under 35 U.S.C. § 112, second paragraph, as being indefinite and failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants amend

Claims 14-17 and 20-23 to overcome these rejections and respectfully request full allowance of Claims 14- 17 and 20-23 as amended. Claim 18 has been cancelled.

Rejections under 35 U.S.C. § 102

Claims 10, 12, 13, 19, and 24 were rejected by the Examiner under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,345,916 issued to Amann et al. ("Amann"). Applicants respectfully traverse and submit the cited art does not teach all of the elements of the claimed embodiment of the invention.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of Calo~ornia, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Furthermore, "the identical invention must be shown in as complete detail as is contained in the ... claim." Richardson v. Suzuki Motor Co. Ltd., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

Applicants respectfully submit that Amann does not teach every element of Applicants' claims. For example, amended Claim 10 recites:

A method for controlling a fuel pressure in a fuel supply device of an internal combustion engine having a regulator valve, the method comprising the steps of:

determining a desired fuel pressure value; determining an actual fuel pressure value; calculating an actual gradient selected from the group consisting of: an actual fuel flow rate gradient and an actual fuel pressure grad~em; comparing the calculated actual gradient to a specified threshold gradient value; and if the calculated actual gradient is above the specified threshold gradient value then determining an actuating signal as a fimction of the desired fuel pressure value and the calculated actual gradient; and controlling said regulator valve with said actuating signal.

Amended Claim 14 recites similar features. Amann does not teach these features of amended Claims 10 and 14. The Examiner points to col. 4, lines 30-55 and Figure 6 of Amann as teaching the features of Claim 1. Col. 4, lines 30-55 merely teaches:

To provide for improved tailoring of each injection event for improving engine firing, this invention controls the operation (energization and de-energization) of solenoid 58 through microprocessor 80. By energizing the solenoid 58 at different points or angles along the pumping ramp of the cam as determined by engine operating conditions, the start of iNection is determined and detected by the microprocessor. The microprocessor knowing the cam angle for start of injection and the quantity of fuel to be injected calculates the angle at which fuel injection is to be terminated. The microprocessor accordingly de-energizes the solenoid after a predetermined angle is reached so that delivery of the desired fuel quantity is injected.

[1]On solenoid de-energization, the valve 60 is displaced by spring 62 to move head 61 of the valve element from its seat and the fuel is "spilled" into the end chamber 52, and thereby back into the fuel supply system. These controls shape the fuel pressure pulses or waves with varying rates in accordance with predetermined classic injection profiles, such as shown in FIG. 6 for examples, programmed into the software of the microprocessor for optimizing fuel burn in the combustion chambers of the engine. **These passages, along with the rest of Amann, fail to teach calculating a gradient, much less "calculating an actual gradient selected from the group consisting of: an actual fuel flow rate gradient and an actual fuel pressure gradient."**

These passages, along with the rest of Amann, also fail to teach comparing a calculated actual gradient to a specified threshold gradient, and if the calculated actual gradient is above the specified threshold gradient, determining an actuating signal as a fimction of the desired fuel pressure value and the calculated actual gradient. Amann teaches nothing about calculating an actual gradient, comparing a calculated gradient to a threshold gradient, or determining an actuating signal as a function of a desired fuel pressure value and a calculated actual gradient.

For at least these reasons, Amann does not teach each and every element of amended independent Claims 10 and 14. Thus, Applicants respectfully request

reconsideration and allowance of independent Claims 10 and 14, as well as all claims that depend therefrom.

Examiner's Response to Arguments

With regards to Applicant's first argument, Applicant has defined "gradient" as a change in pressure values as discussed in Paragraph 24.

"[0024] In a step S2, a fuel pressure set point FUP_SP is determined as a function of the engine speed N, the amount of fuel to be injected MFF_SP and the operating state BZ of the internal combustion engine, e.g. homogeneous or stratified charge operation. In a step S3, the actual fuel pressure value FUP_AV which is detected by the pressure sensor 58 is determined and from it the fuel pressure gradient FUP_DT_AV is determined. **The gradient, which is also known as the time derivative, can be determined by means of any approximation method. It is most easily determined as a function of two consecutive actual fuel pressure values FUP_AV."**

Amann et al. clearly monitors the flow rates as shown in Figures 5 and 6 and discussed on Col. 5, Lines 15-30.

As such, this action is made final.

Conclusion

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH COLEMAN whose telephone number is (571)270-3516. The examiner can normally be reached on 5:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Cronin can be reached on (571)272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAC
/K. C./
Examiner, Art Unit 3747

/Stephen K. Cronin/
Supervisory Patent Examiner, Art Unit 3747